DOCUMENT RESUME

ED 312 244 SP 031 596

AUTHOR Bobbitt, Sharon A.
TITLE What Teachers Majored In: Bachelor's Degree Fields of Public and Private School Teachers. Survey Report.
INSTITUTION National Center for Education Statistics (ED), Washington, DC.
REPORT NO CS-89-064
PUB DATE May 89
NOTE 49p.; Data Series: SP-PUP-85/86-4.2.
PUB TYPE Reports - Research/Technical (143) -- Statistical Data (110)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Bachelors Degrees; Course Selection (Students); Elementary Secondary Education; *Intellectual Disciplines; *Majors (Students); Preservice Teacher Education; *Private Schools; *Public Schools; *Teachers

ABSTRACT

Two basic questions provide the focus for this report: (1) What is the distribution of education and non-education majors among public and private school teachers, and within certain subgroups? and (2) Does the distribution of bachelor's degree fields differ between public and private school teachers? Some key findings are: (1) public and private school teachers generally majored in different fields; (2) elementary education was the most frequent education major for both public and private school teachers; (3) private school teachers were more likely than public school teachers to have majored in elementary education or theology, regardless of teacher characteristics such as sex or teaching level; (4) social sciences was the most popular non-education major for both public and private school teachers; (5) there was no difference in the distribution of major degree fields for teachers of mathematics and science in public and private schools; and (6) among secondary school teachers who majored in education, public school teachers most likely studied general education or physical education, while private school teachers most likely studied elementary education or secondary education. (JD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED312244

NATIONAL CENTER FOR EDUCATION STATISTICS

Survey Report

May 1989

What Teachers Majored In: Bachelor's Degree Fields of Public and Private School Teachers

Sharon A. Bobbitt
Elementary and Secondary Education Statistics Division

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Data Series:
SP-PUP-85/86-4.2

U.S. Department of Education
Office of Educational Research and Improvement

CS 89-064

SP 031 596

2 BEST COPY AVAILABLE

U.S. Department of Education
Lauro F. Cavazos
Secretary

Office of Educational Research and Improvement
Bruno V. Manno
Acting Assistant Secretary

National Center for Education Statistics
Emerson J. Elliott
Acting Commissioner

Information Services
Sharon K. Horn
Acting Director

National Center for Education Statistics

"The purpose of the Center shall be to collect, and analyze, and disseminate statistics and other data related to education in the United States and in other nations."—Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e–1).

BRARY

Highlights

The National Center for Education Statistics' 1985 Public School Survey and 1985-86 Private School Survey asked teachers to identify the specific fields that they majored in for their bachelor's degree.

Some of the key findings are:

- Public and private school teachers generally majored in different fields.
- Elementary education was the most frequent education major for both public and private school teachers, at 33 percent and 45 percent, respectively.
- Private school teachers were more likely than public school teachers to have majored in elementary education or theology, regardless of teacher characteristics such as sex or teaching level.
- Social sciences was the most popular non-education major for both public and private school teachers.
- There was no difference in the distribution of major degree fields for teachers of mathematics and science in public and private schools.
- Among secondary school teachers who majored in education, public school teachers most likely studied general education or physical education, while private school teachers most likely studied elementary education or secondary education.

Table of Contents

Introduction 1

Analysis methodology 2

Results 4

Conclusion 9

Bibliography 10

Technical Notes 11
- The Surveys 11
- Weighting of Observations 11
- Classification of Fields of Study 11
- Variable Definitions 12
  - Sex 12
  - Minority status 12
  - Undergraduate major 12
  - Years of experience 12
  - Age 12
  - Teaching level 13
  - Teaching field 13
- Accuracy of Estimates 13
- Significance Tests 14

For More Information 15

Acknowledgments 15

Appendix Tables 17

List of figures

Figure 1.--Distribution of education majors, by sector 6
Figure 2.--Distribution of non-education majors, by sector 6

List of tables

Table A.--Number of public and private school teachers, by type of major and teacher characteristic 5
Table B.--An analysis of whether public or private school teachers are more likely to have majored in a specific degree field, by selected teacher characteristics 8

What Teachers Majored In: Bachelor's Degree Fields of Public and Private School Teachers

Introduction

Of the almost 2.5 million public and private school teachers[1] in the United States, an overwhelming majority hold at least a bachelor's degree. About 99 percent of public school teachers and almost 95 percent of private school teachers hold a bachelor's degree or higher.[2] Of these, a majority of both public and private school teachers hold only a bachelor's degree. Although previous National Center for Education Statistics (NCES) reports[3] have analyzed teachers' undergraduate majors as education, non-education, or dual majors (double major in both an education and a non-education field), NCES' 1985 Public School Survey and 1985-86 Private School Survey permit a finer analysis of bachelor degree fields.

Providing a focus for this report are two basic questions:

1. What is the distribution of education and non-education majors among public and private school teachers, and within certain subgroups?

2. Does the distribution of bachelor's degree fields differ between public and private school teachers?

To take a specific example, the tables provided in this report will enable a researcher to answer the question, "What proportion of female public and private school teachers majored in elementary education for their undergraduate degree?" But this report will not address the issue of whether teachers are qualified for their current teaching assignments. While both surveys obtained data on advanced degrees, neither survey asked teachers for the subject in which they received their highest degree.[4] Furthermore, the field of an earned degree (whether undergraduate or advanced) may not reflect inservice and post-graduate training which qualifies some teachers to teach in their field of assignment.

Other studies of teachers' educational background include a report in the 1987 edition of *The Condition of Education* that the proportion of newly graduated teachers who had majored in education decreased from 1980 to 1984. According to that report, "an increasing proportion of graduates in other fields went into teach-

---

[1] For this report, "teachers" are public and private school elementary or secondary school teachers who teach in grades K-12. More information about samples and definitions of key variables is provided in the technical notes at the end of the report.

[2] National Center for Education Statistics, "Background and Experience Characteristics of Public and Private School Teachers: 1984-85 and 1985-86, Respectively," *Survey Report*, October 1988.

[3] National Center for Education Statistics, *ibid.*; and "Moonlighting Among Public School Teachers," *Survey Report*, December 1988.

[4] The National Center for Education Statistics' 1987-88 Schools and Staffing Survey will provide detailed information on all of a teacher's degrees, including major and minor fields and year earned.

ing, such as graduates who majored in the social sciences, communications, and miscellaneous fields." That report, based on a survey of newly graduated teachers only, could not address the educational background of teachers in general, however.

Another NCES report, "Trends in Bachelor's and Higher Degrees, 1975-1985," looked at specific bachelor's degree fields earned by all graduates, using a taxonomy similar to that used in this report. Although that report did not distinguish teachers from other respondents, it did report that bachelor's degrees in education decreased 47 percent from 1975 to 1985, dropping it from first to third largest degree field. The use of a detailed taxonomy of specific degree field, combined with a focus on practicing public and private school teachers will form the basis for the remainder of this report.

Analysis methodology

The public and private school surveys both asked teachers to indicate whether they majored in an education field or a non-education field for their bachelor's degree, and to specify their specific major(s) for each type of degree. Because the two surveys used different taxonomies for classification of major degree field, a crosswalk was developed between the two surveys for each type of degree.[5] One requirement of the combined taxonomy was that no major degree field group had too few cases for analysis.

The specific major degree fields for education bachelor's degrees in the combined taxonomy (in alphabetical order) were:

Art education
Business education
Elementary education
Foreign language education
General education
Health education
Mathematics education
Music education
Other education major
Physical education
Pre-elementary education
Reading education
Science education
Secondary education
Social studies education
Special education
Vocational education/Home economics education.

The specific major degree fields for non-education bachelor's degrees in the combined taxonomy (in alphabetical order) were:

Business and communications
Fine arts
Foreign languages
Interdisciplinary and area studies
Letters

[5] More information on the taxonomies used for the two surveys and the crosswalk between them may be found in the technical notes at the end of this report.

Life sciences
Mathematics
Other non-education major
Physical sciences
Psychology
Social sciences
Theology
Vocational or industrial arts/Home economics.

In the combined taxonomy, the "other" category for each type of degree field (education and non-education), contains low frequency degree fields which could not be combined with another field. The classification system for the public schools included an overall "other" category, whereas the private school classification system included "other" as an option within each major field category (e.g. "other fine arts"). For private school teachers, therefore, many "other" responses were collapsed within subject categories (i.e., "other fine arts" was included in the "fine arts" category). This resulted in a smaller residual "other" category among private school teachers. Because of these differences, the "other" category in the combined taxonomy was excluded from some of the following analyses as noted.

Teachers who reported that they had an education major were classified by their specific type of education degree, using the combined education degree taxonomy. Frequency distributions of specific major degree fields for education majors were then constructed for public and private schools separately. Similarly, distributions of non-education degree fields were constructed for both public and private schools. Some teachers (18 percent in public schools and 12 percent in private schools)[6] reported that they had earned both an education and a non-education major. To the degree this occurred, the same teachers were represented in both distributions.

Distributions of education degree fields and non-education degree fields for both public and private schools were next constructed for the following subgroups: elementary school teachers; secondary school teachers; novice teachers (fewer than 5 years of full-time teaching experience); mid-career teachers (between 5 and 24 years of full-time teaching experience); expert teachers (25 years or more of full-time teaching experience); female teachers; male teachers; younger teachers (under 25 years old); mid-age teachers (between 25 and 49 years old); older teachers (at least 50 years old); white, non-Hispanic teachers; minority teachers; and math/science teachers. Thus, four distributions were constructed for all teachers and for each of the subgroups of teachers: public school teachers with education majors, public school teachers with non-education majors, private school teachers with education majors, and private school teachers with non-education majors.

Chi-square analyses were next performed for education degree fields and non-education degree fields separately, for each of the subgroups of teachers and for all teachers. Because there were 13 subgroups of teachers plus the overall sample, each with both education and non-education majors, this resulted in 26 chi-square values. The purpose of this analysis was to assess the independence of sector (public or private) and specific major degree. A significant chi-square value indicated that sector and specific major degree were not independent, that is, that whether a teacher taught in a public or a private school and their specific degree field were related. Because the differences between the public and private school

---

[6] National Center for Education Statistics, "Background and Experience Characteristics of Public and Private School Teachers: 1984-85 and 1985-86, respectively," *Survey Report*, October 1988.

surveys in the composition of the "other" category could artificially inflate the chi-square value, this category was excluded from this analysis.

For those comparisons with chi-square values which were significant at the .01 level, a more detailed analysis was performed. This analysis compared the percentage of public school teachers with bachelor's degrees in each specific field to the percentage of private school teachers who majored in the same specific field. The t-values generated as a result of this analysis were tested for significance at the .01 level.

Results

Table A shows the number of public and private school teachers who majored in education or in a field other than education for each of the 13 subgroups. Frequency distributions for all teachers and for subgroups of teachers by specific major field may be found in the appendix, along with the corresponding standard errors of the percentages and the unweighted sample sizes upon which the distributions are based.

The chi-square value for the overall public/private comparison was significant at the .01 level, indicating that public and private school teachers had different distributions of major degree fields for both education and non-education majors. Among the subgroups, the comparisons of elementary school teachers, secondary school teachers, mid-career teachers, mid-age teachers (education majors only), male teachers, female teachers, and white, non-Hispanic teachers were also significant. The remainder of the subgroups failed to achieve significant chi-square values at the .01 level. Further information on these subgroups may be found in the appendix tables, but is not presented in the text of this report.

Figures 1 and 2 show the distributions of specific education and non-education majors, respectively, for both public and private school teachers. In both public and private schools, a plurality of teachers with education degrees majored in elementary education. Private school teachers, however, were somewhat more likely to major in elementary education than public school teachers. While one-third of the public school teachers majored in elementary education, almost 45 percent of the private school teachers chose this field for their bachelor's degree. This is perhaps due in part to the large number of Catholic elementary schools in the sample.

Private school teachers with education degrees were also more likely than public school teachers with education degrees to have majored in foreign language education, pre-elementary education, reading education, and secondary education. Public school teachers were more likely to have majored in art education, business education, general education, health education, mathematics education, physical education, science education, social studies education, and vocational education/-home economics education. Public and private school teachers were equally likely to have majored in english education, music education, and special education.

The most popular non-education major for both public and private schools teachers was social sciences. About 25 percent of teachers in both public and private schools had majored in social sciences for their non-education bachelor's degree. Private school teachers, however, were more likely to have majored in letters, the second most popular non-education major. While about 24 percent of the private school teachers majored in letters, only 19 percent of the public school teachers chose this field for their non-education degree.

Relatively few sector differences were found among teachers with non-education degrees. Private school teachers were more likely to have majored in letters

Table A.--Number of public and private school teachers, by type of major and teacher characteristic

Characteristic	Total teachers	Public school teachers	Private school teachers
		Education majors	
Total	2,121,419	1,868,985	252,434
Elementary 1/	1,452,290	1,266,276	186,014
Secondary 1/	655,715	592,847	62,868
Novice	297,714	224,344	73,370
Mid-career	1,572,046	1,414,831	157,215
Expert	251,660	229,811	21,849
Female	1,508,588	1,301,251	207,337
Male	612,831	567,734	45,097
Younger	75,905	56,377	19,528
Mid-age	1,667,979	1,471,555	196,424
Older	377,536	341,054	36,482
White, non-Hispanic	1,836,284	1,600,857	235,427
Minority	285,135	268,128	17,007
Mathematics/ science 2/	554,093	499,362	54,731
		Non-education majors	
Total	767,478	590,110	177,368
Elementary 1/	432,328	341,578	90,750
Secondary 1/	329,895	245,545	84,350
Novice	129,875	75,457	54,418
Mid-career	548,023	439,853	108,170
Expert	89,582	74,801	14,781
Female	486,032	368,596	117,436
Male	281,446	221,514	59,932
Younger	19,345	8,829	10,516
Mid-age	579,049	440,745	138,304
Older	169,085	140,536	28,549
White, non-Hispanic	692,017	527,520	164,497
Minority	75,462	62,590	12,872
Mathematics/ science 2/	230,525	177,718	52,807

1/Detail may not add to total due to missing data.

2/This category only includes subject matter teachers (elementary or secondary) who taught at least one mathematics or science course.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Figure 1.--Distribution of education majors, by sector

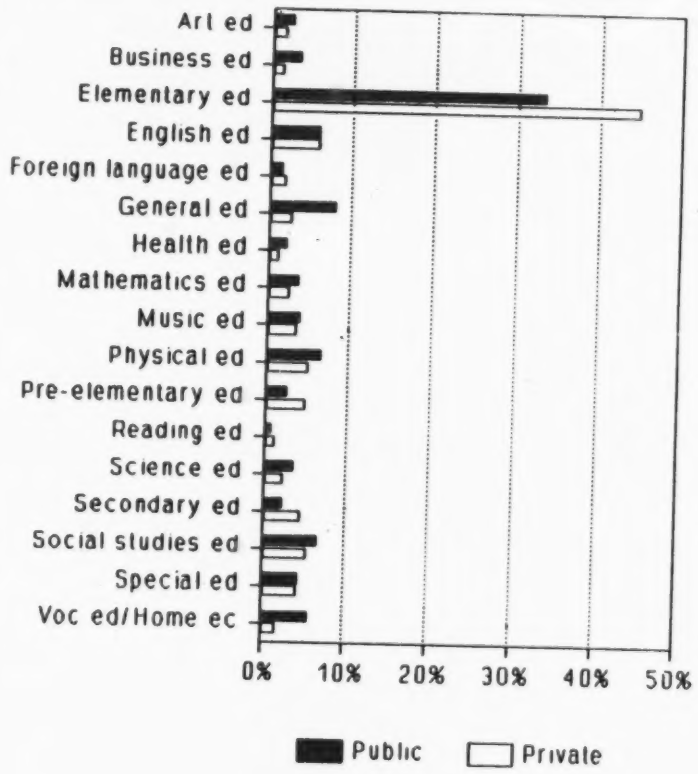
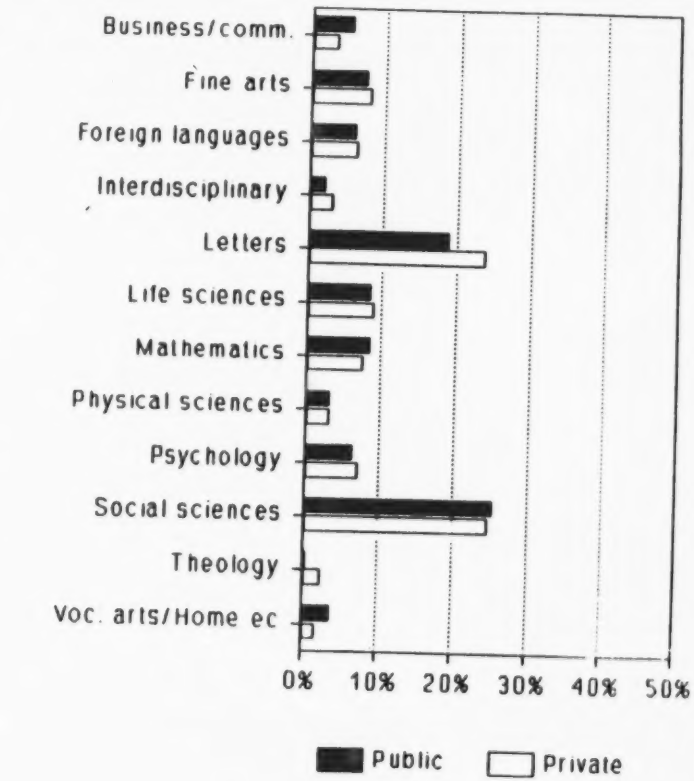


Figure 2.--Distribution of non-education majors, by sector



and theology, while public school teachers were more likely to have majored in business and communications and vocational education/home economics.

A summary of these results, as well as the results for the 13 subgroups of teachers, may be found in the table B. This table shows the results of the families of t-tests performed on individual public/private comparisons of specific degree field, for both education and non-education majors. These results are presented for total teachers and for those subgroups of teachers with significant chi-square values.[7]

The keyword "public" in the body of the table indicates that public school teachers with that characteristic were more likely to have majored in that specific field than private school teachers with that characteristic. For example, public elementary school teachers were more likely to have majored in art education than private elementary school teachers. Similarly, the keyword "private" indicates that private school teachers with that characteristic were more likely to have majored in that field than public school teachers with that characteristic. For example, private elementary school teachers were more likely to have majored in elementary education than public elementary school teachers. An equals sign (=) indicates that no difference was found between public and private school teachers with that characteristic in the percentage who majored in that field. For example, public elementary school teachers and private elementary school teachers were equally likely to have majored in English education for their bachelor's degree.

Some interesting patterns may be observed in this summary table. Perhaps most striking are the subjects in which either public or private school teachers were most likely to major across all subgroups. Not surprisingly, for example, private school teachers were more likely to have majored in the non-education field of theology, regardless of teacher characteristic. Future studies might examine whether this result would change if private school teachers were further subdivided into secular, Catholic, and other religious school teachers. Private school teachers were also consistently more likely to have majored in elementary school education than public school teachers. Only among male teachers was no difference found, and this was likely due to the relatively small number of male elementary school teachers in both public and private schools.

Subjects in which public school teachers were more likely to have majored, regardless of teacher characteristic, included general education, vocational education/home economics, and other non-education major (which result, as explained previously, was a function of the taxonomy). Across all teacher characteristics, public and private school teachers were equally likely to have majored in fine arts, physical sciences, or social sciences.

For most of the specific major fields, public or private school teachers exclusively were more likely to have majored in that field, regardless of teacher characteristic, when differences were found. For example, when differences were found between public and private school teachers in business and communications, public school teachers were more likely to have majored in that field. But for two of the teacher characteristics (male and secondary), no differences were found. Similarly, when differences were found between public and private school teachers in pre-elementary education, private school teachers were more likely to have majored in that field.

Relatively rare were cases of crossover, that is, when either public or private school teachers were more likely to have majored in a subject, depending on the

---

[7] The estimates and standard errors used to perform the t-tests and create the summary table are provided in the appendix.

Table B.--An analysis of whether public or private school teachers are more likely to have majored in a specific degree field, by selected teacher characteristics

Major degree field for bachelor's degree	Total	Teacher characteristic						
		Elementary	Secondary	Mid-career	Female	Male	Mid-age	White, non-Hispanic
Education degree field								
Art education	Public	Public	Private	Public	=	Public	=	Public
Business education	Public	Public	Public	Public	Public	Public	Public	Public
Elementary education	Private	Private	Private	Private	Private	=	Private	Private
English education	=	=	=	=	=	=	=	=
Foreign language education	Private	=	Private	=	=	Private	Private	Private
General education	Public	Public	Public	Public	Public	Public	Public	Public
Health education	Public	Public	=	Public	=	=	Public	Public
Mathematics education	Public	Public	=	Public	Public	=	Public	Public
Music education	=	=	=	=	=	Private	=	=
Other education major	Private	Private	Private	Private	=	Private	=	Private
Physical education	Public	=	=	Public	=	=	Public	Public
Pre-elementary education	Private	Private	=	Private	Private	=	Private	Private
Reading education	Private	Private	=	=	Private	=	Private	Private
Science education	Public	Public	Public	Public	=	=	=	Public
Secondary education	Private	Private	Private	Private	Private	Private	Private	Private
Social studies education	Public	=	=	Public	=	=	Private	=
Special education	=	=	=	Public	=	=	=	=
Vocational education/ Home economics education	Public	Public	Public	Public	Public	Public	Public	Public
Non-education degree field								
Business and communications	Public	Public	=	*	Public	=	=	Public
Fine arts	=	=	=	*	=	=	=	=
Foreign languages	=	=	Private	*	=	Private	=	=
Interdisciplinary and area studies	=	=	Private	*	=	Private	=	=
Letters	Private	Private	=	*	=	Private	Private	Private
Life sciences	=	-	=	*	=	=	=	=
Mathematics	=	Public	=	*	=	=	Public	=
Other non-education major	Public	Public	Public	*	Public	Public	Public	Public
Physical sciences	=	=	=	*	=	=	=	=
Psychology	=	=	=	*	=	=	=	=
Social sciences	=	=	=	*	=	=	=	=
Theology	Private	Private	Private	*	Private	Private	Private	Private
Vocational or industrial arts/ Home economics	Public	=	Public	*	=	Public	Public	Public

Public: Public school teachers were more likely to have majored in that field than private school teachers.
Private: Private school teachers were more likely to have majored in that field than public school teachers.
=: Public and private school teachers were equally likely to have majored in that field.
*: The overall chi-square analysis was not significant so public/private comparisons were not conducted.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

BEST COPY AVAILABLE

teacher characteristic. For example, public school teachers overall were more likely to have majored in art education. In addition, public school teachers in three of the subgroups (elementary, male, and white, non-Hispanic) were more likely to have majored in art education. But private secondary school teachers were more likely to have majored in art education than public secondary school teachers. This may reflect differences in the secondary school curriculum between public and private schools, or other factors.

Conclusion

Although this report provides basic information on the fields of study that teachers pursued for their bachelor's degrees, it leaves some questions unanswered. One important issue in the education reform movement is teacher quality, that is, are teachers adequately trained to teach in their assigned fields? Although the public and private school surveys obtained data on teachers' fields of assignment, the lack of specific information about degrees earned beyond the bachelor's level makes it impossible to address this question validly.

The National Center for Education Statistics' 1987-88 Schools and Staffing Survey (SASS), which incorporates aspects of both the private and public school surveys, will greatly enhance researchers' abilities to address these issues. Specific data on teacher assignment will be available, along with detailed information on all of a teacher's earned degrees including the specific major and minor fields of that degree and the year it was earned. In addition, both the public and private school parts of SASS use the same classification system for major degree field. Clearly, the use of one common taxonomy will greatly reduce problems of comparison between public and private school teachers.

Bibliography

U.S. Department of Education. National Center for Education Statistics. *Trends in Bachelors and Higher Degrees, 1975-1985*. J. Carpenter. Washington, D.C.: 1987.

U.S. Department of Education. National Center for Education Statistics. *A Classification of Instructional Programs*. G. S. Malitz. Washington, D.C.: 1981.

U.S. Department of Education. National Center for Education Statistics. *The Condition of Education*. Washington, D.C.: 1987.

U.S. Department of Health, Education, and Welfare. Office of Education. National Center for Education Statistics. "A Taxonomy of Instructional Programs in Higher Education." R. A. Huff and M. O. Chandler. Washington, D.C.: 1970.

Technical Notes

The Surveys

The 1985 Public School Survey was conducted by mail during the late winter and spring of 1985 by Research Triangle Institute, Inc. The survey had responses from 8,568 teachers and 2,301 administrators from an initial sample of 2,801 schools. Actual response rates were 85 percent for schools and 80 percent for teachers. The schools were selected from the Common Core of Data maintained by the National Center for Education Statistics and were stratified on school type (elementary, secondary, and other) and on local education agency size (1 to 5 schools, 6 to 50 schools, and more than 50 schools). Teachers were sampled from lists provided by the schools and stratified by "teaching assignment" (elementary, mathematics or science, and other). School-level data were collected on enrollment, student characteristics, staffing levels, use of aides and unpaid volunteers, computer usage, incentive pay programs, and other areas. Teacher-level data were collected on demographic characteristics, educational background, training experiences, time usage, compensation, and other employment as well as other topics. Data collection occurred within the first few months of 1985. More information on the 1985 Public School Survey may be found in the "1985 Public School Survey, Final Report," prepared for the National Center for Education Statistics by Research Triangle Institute, November 1986.

The 1985-86 National Survey of Private Schools was conducted by mail during spring 1986 by Westat, Inc. The survey had responses from 5,295 teachers and 1,175 administrators from 1,387 private schools. The overall response rate was 85 percent for schools and 76 percent for teachers. The schools were selected from lists developed in 1983 of all identifiable private schools in 75 primary sampling units. Teachers were selected without stratification from lists supplied by the schools. At the school level, data were collected about religious orientation, grades served, enrollment and student characteristics, tuition, staffing, use of aides and volunteers, program offerings, and years of operation. From teachers, information was obtained about demographic characteristics, educational background, courses taught, time expenditures, cash and non-cash compensation, and other employment. More information on the 1985-86 Private School Survey may be found in "Private Schools and Private School Teachers: Final Report of the 1985-86 Private School Study," prepared for the National Center for Education Statistics by Westat, Inc., March 1987.

Weighting of Observations

The sample design is such that the probability of selection varies among categories of teachers and schools. These unequal probabilities must be taken into account in the analysis by weighting each observation appropriately; otherwise, some types of teachers and schools would receive more or less weight than is warranted by their representation in the population, and the results would not be typical of the Nation as a whole. The weight assigned to a sample member (an administrator or teacher) is an inflation factor which determined the member's contribution to an estimated population total or some other estimate of interest. Specifically, the analysis weight for a sample member is the reciprocal of its probability of selection (known as its initial or sampling weight), adjusted to account for survey nonresponse. To reduce the variance of the private school estimates, the weights were ratio adjusted to the Quality Education Data file estimates of the number of private schools. The ratio adjustment was applied to four groups of schools separately: Catholic elementary, Catholic not elementary, non-Catholic elementary, and non-Catholic not elementary. The teacher weight was computed from the school weight,

adjusting for nonresponse. All estimates in this report, including estimates of standard errors, are based on weighted computations in which the weights reflect the sampling probability associated with each observation.

Classification of Fields of Study

The 1985 Public School Survey classified earned bachelor's degrees using "Classification of Instructional Programs (1981)." The Private School Survey used "A Taxonomy of Instructional Programs in Higher Education (1971)" to classify bachelor's degrees. A coding scheme was developed which combined these two classification systems into the 31 fields of study discussed in this report. More information on the development of this combined taxonomy and a copy of the crosswalk is available upon request.

Variable Definitions

The following definitions link each variable used in this analysis to the corresponding item(s) on the questionnaires:

Sex

The response to Public Teacher item 34 and Private Teacher item 24, "What is your sex?"

Minority status

The response to Public Teacher item 33 and Private Teacher item 23, "To which one of the following racial/ ethnic groups do you belong? (Check one.)

1. American Indian or Alaskan Native
2. Asian or Pacific Islander
3. Black (not of Hispanic origin)
4. White (not of Hispanic origin)
5. Hispanic"

For these analyses, those who indicated responses 1, 2, 3, and 5 were grouped into a single "minority" category because of the small numbers of responses to several of these categories, particularly from the private teacher group.

Undergraduate major

The field reported in Public Teacher item 2 and Private Teacher item 2, "What was (were) your major field(s) of study for your BACHELOR'S DEGREE(s)? (If you had more than one major, specify all that apply.)" Teachers could classify their majors as "Education" or "Non-education," and their responses were classified into specific degree fields according to the combined taxonomy.

Years of experience

Length of time reported in part (a) of Public Teacher item 8 and Private Teacher item 8, "How many years of elementary/ secondary school teaching experience in public and private schools will you have completed at the end of this school year?"

Both surveys provided full-time and part-time years separately, but only the private school survey provided public and private school experience separately. For these analyses, years of teaching experience included both public and private school experience. Only the full-time years were used in this report.

Teachers were coded as "inexperienced" if they reported less than 5 years of full-time teaching experience, as "mid-career" if they reported between 5 and 24

years of full-time teaching experience, and as "experienced" if they reported 25 years or more of full-time teaching experience.

Age

The response to Public Teacher item 35 and Private Teacher item 25, "What was your age on your last birthday? Age on last birthday:_____"

Teachers were coded as "younger" if they were under 25 years of age, as "mid-age" if they were between 25 and 29 years of age, and as "older" if they were 50 years of age or older.

Teaching level

Based on Public Administrator item 9 and Private Administrator item 4, "Check each grade in which instruction is offered in this school, whether or not there are any students enrolled in that grade."

The schools' teaching levels were coded as "elementary" if the highest grade in the school was less than grade nine; "secondary" if the lowest grade was higher than grade eight; and "other." If a teacher was linked to a school with teaching levels defined as "elementary" or "secondary" by that method, the teacher was likewise defined as teaching at the "elementary level" or "secondary level." (This approach defined the teaching level of 7,076, or 94.2 percent, of the sample of 7,500 public school teachers who could be linked to school-level data and 4,196, or 79.2 percent, of the total sample of 5,295 private school teachers.) The teaching level of a teacher whose school's teaching level was defined as "other" or who could not be linked to a school is based on Public Teacher item 14 and Private Teacher items 11 and 12, which ask for the grade levels of the students taught. If the highest grade of the students taught was less than grade nine and the lowest grade was kindergarten or higher, teaching level was defined as "elementary"; if the lowest grade was at or above grade nine, teaching level was "secondary." Teachers of prekindergarten or ungraded classes, where no grade level boundaries could be established by inspecting the data, were defined as missing for this analysis. As a result of both steps, 8,392 of the total public school sample of 8,568 were defined as "elementary" or "secondary" level teachers as were 5,249 of 5,295 private school teachers.

Teaching field

Based on Public Teacher item 14 and Private Teacher item 12, if a teacher taught one or more subject matter classes in biological sciences, computer science, mathematics, or physical sciences, they were coded as a "Math/science teacher."

Accuracy of Estimates

The estimates presented in the tables are based on samples and are subject to sampling variability. Caution should be exercised in interpreting statistics based on relatively small numbers of cases as well as in interpreting small differences between estimates. If the questionnaires had been sent to different samples, the responses would not have been identical; some numbers might have been higher, others lower. The standard errors in the tables provide indications of the accuracy of each estimate. The standard errors were estimated using a Taylor Series approximation (PROC CDCTAB in SAS, developed by the Longitudinal Studies Branch of NCES) for the public school data and a balanced-repeated-replications procedure (PROC WESVAR in SAS, developed by Westat, Inc.) for the private school data. If all possible samples of the same size were surveyed under identical conditions, a range of plus or minus one standard error about the estimate would include the "true" population value of the variable in about two-thirds of the samples; a range of plus or minus two standard errors would include the population value about 95 percent of the time. Note, however, that the standard errors in the tables do not take into account the effects of biases due to nonresponse, measure-

ment error, processing error, or other systematic error that could occur even in a complete ("universe") survey.

Significance Tests

In this report, all comparisons cited in the text are statistically significant at the .01 level of significance unless otherwise noted. The phrase "no differences were found" indicates that the difference was not statistically significant at the .01 level.

The chi-square analyses were performed by multiplying weighted population estimates of the percentage of teachers in each category by the unweighted sample size. This number was then divided by the average design effect for the distribution. The design effects used were based upon the overall distribution of teachers and were the design effects averaged across all subjects within public education degrees, private education degrees, public non-education degrees, and private non-education degrees. These new distributions, with adjusted numbers of teachers by sector and subject matter field, were then used as the observed distributions in a standard chi-square analysis with an expected distribution calculated from the marginals of the observed distribution.

There are hazards in performing statistical tests for each comparison. When making several t-tests, it becomes increasingly likely that at least one of them will give a misleading result. When there is really no difference between the means or percentages being compared, there is still a one percent chance of getting a t-value of 2.33 from sampling error. Although this one percent risk seems acceptable for a single t-test, the risk of getting at least one t-value of 2.33 in a series of t-tests goes up. For five t-tests, the risk of getting one misleading t-score grows to 5 percent; for ten t-tests, it grows to 10 percent; and for 20 t-tests, the risk of getting one t value of 2.33 from sampling error increases to 18 percent. The risk of finding a significant t-score as a result of sampling error decreases for t scores over 2.33.

There is a balance between making multiple tests, one of which can then give misleading results, and making few tests under stringent control of error rates, a strategy likely to fail to find differences when they exist. There is no simple solution to this dilemma for a descriptive, exploratory report.

These conditions do not apply to specific *a priori* hypotheses. If the reader has an interest in specific fields of study and uses this report to investigate public/private differences for those fields, the entries in the summary table are appropriate. In this case, the table values serve as a convenience to the reader who has *a priori* questions about course distributions and the tables provide the appropriate information to compute t-tests. Contrast this with the reader who does not have a specified set of fields but instead looks for differences across all subjects. In this second case, there is no restriction to a limited number of t-tests, and the above warning applies.

For More Information

For more information about this report or the NCES 1984-85 Public School Survey, contact Sharon A. Bobbitt, Elementary and Secondary Education Statistics Division, U.S. Department of Education, 555 New Jersey Avenue NW, Washington DC 20208-5730; telephone (202) 357-6461.

Acknowledgments

The draft manuscript of this report was reviewed by Edie McArthur, Cross-cutting Education Statistics and Analysis Division and Paula Knepper, Post-secondary Education Statistics Division, National Center for Education Statistics; by Penelope Early of the American Association of Colleges of Teacher Education; and by Robert Smith of the Council on American Private Education. Paula Knepper also assisted in the development of the crosswalk. This manuscript was edited by Mark Travaglini of Information Services, OERI.

Appendix Tables

Table 1.--Distribution of major degree fields, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	1,868,985	252,434
	Percent	
Art education	2.5	1.5
Business education	3.4	1.4
Elementary education	33.3	44.8
English education	6.0	6.0
Foreign language education	1.4	1.9
General education	8.0	2.7
Health education	2.1	1.2
Mathematics education	3.7	2.6
Music education	4.0	3.6
Other education major	2.9	4.9
Physical education	6.6	5.2
Pre-elementary education	2.6	4.8
Reading education	0.7	1.2
Science education	3.5	2.4
Secondary education	2.3	4.6
Social studies education	6.7	5.4
Special education	4.4	4.2
Vocational education/Home economics education	5.7	1.7
Non-education degree field		
Total number of teachers (weighted)	590,110	177,368
	Percent	
Business and communications	5.3	3.4
Fine arts	7.3	7.9
Foreign languages	6.0	6.4
Interdisciplinary and area studies	2.0	3.0
Letters	18.8	23.8
Life sciences	8.5	8.9
Mathematics	8.4	7.6
Other non-education major	5.3	0.4
Physical sciences	3.0	3.0
Psychology	6.3	7.1
Social sciences	25.3	24.7
Theology	0.2	2.3
Vocational or industrial arts/Home economics	3.6	1.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 2.--Standard errors for distribution of major degree fields, by sector (table 1)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	7,335	3,331
	Standard errors (in percents)	
Art education	0.27	0.17
Business education	0.25	0.40
Elementary education	0.77	1.34
English education	0.36	0.81
Foreign language education	0.17	0.38
General education	0.40	0.52
Health education	0.22	0.32
Mathematics education	0.20	0.37
Music education	0.34	0.43
Other education major	0.26	0.60
Physical education	0.37	0.62
Pre-elementary education	0.24	0.65
Reading education	0.11	0.25
Science education	0.20	0.30
Secondary education	0.21	0.74
Social studies education	0.36	0.62
Special education	0.35	1.14
Vocational education/Home economics education	0.35	0.26
Non-education degree field		
Unweighted sample size	2,697	2,272
	Standard errors (in percents)	
Business and communications	0.53	0.48
Fine arts	0.73	0.74
Foreign languages	0.68	0.67
Interdisciplinary and area studies	0.[illegible]	0.60
Letters	1.01	1.36
Life sciences	0.56	0.78
Mathematics	0.52	0.66
Other non-education major	0.56	0.13
Physical sciences	0.29	0.34
Psychology	0.60	0.71
Social sciences	1.16	1.34
Theology	0.12	0.38
Vocational or industrial arts/Home economics	0.47	0.50

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 3.--Distribution of major degree fields of elementary school teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	1,266,276	186,014
	Percent	
Art education	2.5	0.9
Business education	1.2	0.3
Elementary education	46.6	56.0
English education	4.6	4.9
Foreign language education	0.7	0.8
General education	6.9	2.6
Health education	1.5	0.5
Mathematics education	2.3	1.4
Music education	3.9	3.4
Other education major	3.1	4.6
Physical education	4.4	3.8
Pre-elementary education	3.7	6.4
Reading education	0.9	1.4
Science education	2.3	1.4
Secondary education	1.3	2.1
Social studies education	5.4	4.5
Special education	4.8	3.8
Vocational education/Home economics education	3.7	1.2
Non-education degree field		
Total number of teachers (weighted)	341,578	90,750
	Percent	
Business and communications	4.9	2.6
Fine arts	8.7	11.3
Foreign languages	5.8	4.0
Interdisciplinary and area studies	3.0	3.0
Letters	17.2	24.0
Life sciences	5.8	5.9
Mathematics	5.4	3.6
Other non-education major	5.7	0.5
Physical sciences	1.2	1.5
Psychology	8.9	10.2
Social sciences	29.5	27.8
Theology	0.1	2.7
Vocational or industrial arts/Home economics	3.8	2.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 4.--Standard errors for distribution of major degree fields of of elementary school teachers, by sector (table 3)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	3,612	2,531
	Standard errors (in percents)	
Art education	0.36	0.16
Business education	0.23	0.10
Elementary education	1.11	1.87
English education	0.44	0.91
Foreign language education	0.16	0.24
General education	0.52	0.54
Health education	0.27	0.15
Mathematics education	0.25	0.27
Music education	0.45	0.47
Other education major	0.35	0.69
Physical education	0.44	0.91
Pre-elementary education	0.35	0.82
Reading education	0.16	0.26
Science education	0.25	0.25
Secondary education	0.23	0.78
Social studies education	0.45	0.65
Special education	0.49	0.76
Vocational education/Home economics education	0.42	0.30
Non-education degree field		
Unweighted sample size	990	1,177
	Standard errors (in percents)	
Business and communications	0.73	0.58
Fine arts	1.14	1.39
Foreign languages	0.98	0.61
Interdisciplinary and area studies	0.72	0.89
Letters	1.44	1.80
Life sciences	0.76	0.82
Mathematics	0.69	0.52
Other non-education major	0.86	0.20
Physical sciences	0.33	0.32
Psychology	0.98	1.06
Social sciences	1.77	1.72
Theology	0.11	0.49
Vocational or industrial arts/Home economics	0.73	0.93

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 5.--Distribution of major degree fields of secondary school teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	592,847	62,868
	Percent	
Art education	2.5	3.4
Business education	8.0	4.6
Elementary education	5.1	12.5
English education	9.1	9.4
Foreign language education	3.0	5.1
General education	10.3	2.9
Health education	3.5	3.3
Mathematics education	6.9	6.3
Music education	4.2	4.3
Other education major	2.5	5.9
Physical education	11.5	9.1
Pre-elementary education	0.3	0.1
Reading education	0.2	0.6
Science education	6.3	5.3
Secondary education	4.5	12.1
Social studies education	9.5	8.5
Special education	2.8	2.7
Vocational education/Home economics education	9.9	3.6
Non-education degree field		
Total number of teachers (weighted)	245,545	84,350
	Percent	
Business and communications	6.0	4.3
Fine arts	5.3	4.4
Foreign languages	6.5	9.1
Interdisciplinary and area studies	0.7	3.1
Letters	21.0	23.5
Life sciences	12.1	12.0
Mathematics	12.7	12.1
Other non-education major	4.6	0.2
Physical sciences	5.5	4.7
Psychology	2.6	2.8
Social sciences	19.5	21.5
Theology	0.3	1.9
Vocational or industrial arts/Home economics	3.2	0.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 6.--Standard errors for distribution of major degree fields of secondary school teachers, by sector (table 5)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	3,578	775
	Standard errors (in percents)	
Art education	0.34	0.66
Business education	0.59	1.40
Elementary education	0.47	2.14
English education	0.63	1.82
Foreign language education	0.40	1.10
General education	0.59	0.71
Health education	0.40	1.20
Mathematics education	0.34	0.96
Music education	0.44	0.59
Other education major	0.32	0.94
Physical education	0.67	1.24
Pre-elementary education	0.00	0.09
Reading education	0.00	0.49
Science education	0.34	0.88
Secondary education	0.43	1.83
Social studies education	0.61	1.03
Special education	0.35	1.17
Vocational education/Home economics education	0.65	0.88
Non-education degree field		
Unweighted sample size	1,664	1,076
	Standard errors (in percents)	
Business and communications	0.76	0.70
Fine arts	0.72	0.64
Foreign languages	0.89	1.18
Interdisciplinary and area studies	0.28	0.51
Letters	1.34	1.80
Life sciences	0.82	1.15
Mathematics	0.79	1.44
Other non-education major	0.62	0.15
Physical sciences	0.52	0.58
Psychology	0.49	0.63
Social sciences	1.27	1.54
Theology	0.23	0.66
Vocational or industrial arts/Home economics	0.51	0.30

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 7.--Distribution of major degree fields of novice teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	224,344	73,370
	Percent	
Art education	2.2	1.1
Business education	2.9	1.2
Elementary education	31.0	42.3
English education	4.7	4.5
Foreign language education	1.1	1.7
General education	6.9	2.0
Health education	2.0	1.6
Mathematics education	3.3	2.6
Music education	7.2	4.4
Other education major	4.5	4.9
Physical education	7.1	6.2
Pre-elementary education	3.8	5.7
Reading education	1.4	1.4
Science education	3.0	2.1
Secondary education	3.0	4.1
Social studies education	2.9	4.5
Special education	7.4	8.5
Vocational education/Home economics education	5.6	1.2
Non-education degree field		
Total number of teachers (weighted)	75,457	54,418
	Percent	
Business and communications	6.0	3.3
Fine arts	8.0	9.5
Foreign languages	8.8	6.4
Interdisciplinary and area studies	3.4	3.1
Letters	14.7	23.1
Life sciences	8.4	10.0
Mathematics	5.8	6.6
Other non-education major	5.0	0.2
Physical sciences	2.7	2.1
Psychology	7.4	9.6
Social sciences	21.3	21.0
Theology	0.0	3.0
Vocational or industrial arts/Home economics	6.5	2.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 8.--Standard errors for distribution of major degree fields of novice teachers, by sector (table 7)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	821	954
	Standard errors (in percents)	
Art education	0.73	0.41
Business education	0.75	0.40
Elementary education	2.13	2.58
English education	1.03	0.71
Foreign language education	0.38	0.48
General education	1.07	0.49
Health education	0.71	0.57
Mathematics education	0.60	0.52
Music education	1.35	0.95
Other education major	0.88	0.78
Physical education	1.07	1.02
Pre-elementary education	0.78	0.80
Reading education	0.51	0.55
Science education	0.51	0.68
Secondary education	0.87	1.31
Social studies education	0.70	0.75
Special education	1.32	3.26
Vocational education/Home economics education	1.04	0.39
Non-education degree field		
Unweighted sample size	339	679
	Standard errors (in percents)	
Business and communications	1.42	0.73
Fine arts	2.47	1.40
Foreign languages	2.63	1.33
Interdisciplinary and area studies	1.40	0.69
Letters	3.04	0.39
Life sciences	1.73	2.30
Mathematics	1.28	1.46
Other non-education major	1.33	0.18
Physical sciences	0.86	0.57
Psychology	2.03	1.54
Social sciences	3.36	2.33
Theology	0.00	0.89
Vocational or industrial arts/Home economics	1.84	0.80

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 9.--Distribution of major degree fields of mid-career teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	1,414,831	157,215
	Percent	
Art education	2.8	1.9
Business education	3.3	1.6
Elementary education	33.7	46.4
English education	6.3	6.0
Foreign language education	1.6	2.0
General education	7.9	2.7
Health education	2.0	1.2
Mathematics education	3.9	2.5
Music education	3.3	3.2
Other education major	3.0	5.0
Physical education	6.2	5.0
Pre-elementary education	2.7	4.4
Reading education	0.7	1.0
Science education	3.7	2.6
Secondary education	2.3	4.7
Social studies education	7.0	5.3
Special education	4.5	2.7
Vocational education/Home economics education	5.4	1.9
Non-education degree field		
Total number of teachers (weighted)	439,853	108,170
	Percent	
Business and communications	5.0	3.6
Fine arts	7.1	7.5
Foreign languages	5.7	6.1
Interdisciplinary and area studies	2.0	3.0
Letters	19.4	23.0
Life sciences	8.7	9.1
Mathematics	8.4	7.7
Other non-education major	4.7	0.4
Physical sciences	3.3	3.5
Psychology	6.2	6.6
Social sciences	26.0	26.2
Theology	0.3	1.7
Vocational or industrial arts/Home economics	3.2	1.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 10.--Standard errors for distribution of major degree fields of mid-career teachers, by sector (table 9)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	5,541	2,065
	Standard errors (in percents)	
Art education	0.33	0.28
Business education	0.27	0.54
Elementary education	0.87	1.86
English education	0.42	1.12
Foreign language education	0.21	0.47
General education	0.45	0.58
Health education	0.24	0.31
Mathematics education	0.24	0.46
Music education	0.36	0.63
Other education major	0.30	1.02
Physical education	0.41	1.00
Pre-elementary education	0.27	0.79
Reading education	0.12	0.27
Science education	0.24	0.42
Secondary education	0.22	1.02
Social studies education	0.42	0.71
Special education	0.41	0.54
Vocational education/Home economics education	0.39	0.41
Non-education degree field		
Unweighted sample size	1,988	1,382
	Standard errors (in percents)	
Business and communications	0.61	0.70
Fine arts	0.81	0.86
Foreign languages	0.74	0.91
Interdisciplinary and area studies	0.51	0.72
Letters	1.19	1.48
Life sciences	0.67	1.11
Mathematics	0.59	0.82
Other non-education major	0.59	0.24
Physical sciences	0.36	0.35
Psychology	0.70	0.95
Social sciences	1.36	2.10
Theology	0.15	0.38
Vocational or industrial arts/Home economics	0.53	0.49

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 11.--Distribution of major degree fields of experienced teachers by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	229,811	21,849
	Percent	
Art education	1.1	0.6
Business education	4.5	0.3
Elementary education	33.3	41.3
English education	5.6	10.7
Foreign language education	0.7	1.8
General education	10.0	4.9
Health education	2.8	0.3
Mathematics education	3.1	3.0
Music education	4.9	3.7
Other education major	1.1	4.2
Physical education	9.0	3.0
Pre-elementary education	1.2	4.5
Reading education	0.3	1.7
Science education	3.3	1.8
Secondary education	2.1	5.6
Social studies education	8.2	9.5
Special education	0.6	0.8
Vocational education/Home economics education	7.9	2.2
Non-education degree field		
Total number of teachers (weighted)	74,801	14,781
	Percent	
Business and communications	6.3	2.1
Fine arts	7.9	5.1
Foreign languages	5.4	8.0
Interdisciplinary and area studies	0.5	2.8
Letters	16.3	32.0
Life sciences	7.3	3.2
Mathematics	11.1	10.1
Other non-education major	9.1	0.5
Physical sciences	1.9	2.4
Psychology	5.5	1.1
Social sciences	25.4	27.2
Theology	0.0	3.8
Vocational or industrial arts/Home economics	2.7	1.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 12.--Standard errors for distribution of major degree fields of experienced teachers, by sector (table 11)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	973	312
	Standard errors (in percents)	
Art education	0.39	0.17
Business education	0.86	0.26
Elementary education	1.86	2.72
English education	1.02	1.19
Foreign language education	0.33	1.04
General education	1.13	1.49
Health education	0.74	0.33
Mathematics education	0.47	1.39
Music education	0.97	0.94
Other education major	0.30	1.54
Physical education	1.28	1.60
Pre-elementary education	0.40	1.75
Reading education	0.21	0.74
Science education	0.49	0.87
Secondary education	0.51	1.58
Social studies education	1.17	1.82
Special education	0.36	0.71
Vocational education/Home economics education	1.15	1.02
Non-education degree field		
Unweighted sample size	370	211
	Standard errors (in percents)	
Business and communications	1.54	1.00
Fine arts	2.14	2.25
Foreign languages	1.73	2.05
Interdisciplinary and area studies	0.39	1.82
Letters	2.70	3.29
Life sciences	1.24	1.35
Mathematics	1.72	1.76
Other non-education major	2.38	0.51
Physical sciences	0.52	1.73
Psychology	1.34	0.62
Social sciences	2.95	2.97
Theology	0.00	1.46
Vocational or industrial arts/Home economics	1.01	0.91

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 13.--Distribution of major degree fields of female teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	1,301,251	207,337
	Percent	
Art education	2.4	1.6
Business education	3.2	1.4
Elementary education	42.1	51.9
English education	6.5	6.0
Foreign language education	1.6	1.5
General education	7.8	2.5
Health education	1.4	0.9
Mathematics education	2.8	2.1
Music education	3.2	2.7
Other education major	2.9	3.7
Physical education	4.1	3.4
Pre-elementary education	3.7	5.8
Reading education	1.0	1.4
Science education	2.1	1.8
Secondary education	1.9	3.1
Social studies education	4.2	3.7
Special education	5.4	4.8
Vocational education/Home economics education	3.5	1.7
Non-education degree field		
Total number of teachers (weighted)	368,596	117,436
	Percent	
Business and communications	3.9	2.3
Fine arts	8.4	10.1
Foreign languages	8.4	7.1
Interdisciplinary and area studies	2.9	3.2
Letters	22.6	23.8
Life sciences	7.7	8.2
Mathematics	6.6	7.1
Other non-education major	4.9	0.4
Physical sciences	1.9	2.2
Psychology	7.9	9.2
Social sciences	21.1	22.0
Theology	0.2	1.7
Vocational or industrial arts/Home economics	3.6	2.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 14.--Standard errors for distribution of major degree fields of female teachers, by sector (table 13)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	4,754	2,767
	Standard errors (in percents)	
Art education	0.33	0.18
Business education	0.30	0.40
Elementary education	0.94	1.68
English education	0.44	0.95
Foreign language education	0.21	0.29
General education	0.49	0.55
Health education	0.23	0.24
Mathematics education	0.23	0.36
Music education	0.38	0.39
Other education major	0.30	0.45
Physical education	0.37	0.72
Pre-elementary education	0.34	0.73
Reading education	0.16	0.30
Science education	0.21	0.26
Secondary education	0.23	0.80
Social studies education	0.36	0.50
Special education	0.47	1.31
Vocational education/Home economics education	0.35	0.27
Non-education degree field		
Unweighted sample size	1,517	1,551
	Standard errors (in percents)	
Business and communications	0.62	0.54
Fine arts	1.00	1.19
Foreign languages	0.98	0.69
Interdisciplinary and area studies	0.68	0.65
Letters	1.37	1.84
Life sciences	0.73	1.27
Mathematics	0.62	0.65
Other non-education major	0.73	0.15
Physical sciences	0.32	0.36
Psychology	0.85	1.07
Social sciences	1.42	1.31
Theology	0.16	0.25
Vocational or industrial arts/Home economics	0.58	0.74

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 15.--Distribution of major degree fields of male teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	567,734	45,097
	Percent	
Art education	2.6	1.1
Business education	3.7	1.1
Elementary education	13.0	12.3
English education	5.0	5.9
Foreign language education	1.1	3.6
General education	8.4	3.2
Health education	3.7	2.7
Mathematics education	5.8	4.8
Music education	5.7	7.6
Other education major	3.0	10.6
Physical education	12.5	13.2
Pre-elementary education	0.2	0.3
Reading education	0.1	0.1
Science education	6.8	4.8
Secondary education	3.4	11.3
Social studies education	12.3	13.5
Special education	2.0	1.8
Vocational education/Home economics education	10.7	2.1
Non-education degree field		
Total number of teachers (weighted)	221,514	59,932
	Percent	
Business and communications	7.7	5.6
Fine arts	5.4	3.6
Foreign languages	2.2	4.9
Interdisciplinary and area studies	0.5	2.6
Letters	12.3	23.6
Life sciences	9.9	10.1
Mathematics	11.0	8.5
Other non-education major	5.9	0.3
Physical sciences	4.9	4.5
Psychology	3.6	3.0
Social sciences	32.4	29.8
Theology	0.2	3.4
Vocational or industrial arts/Home economics	3.6	0.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 16.--Standard errors for distribution of major degree fields of male teachers, by sector (table 15)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	2,581	564
	Standard errors (in percents)	
Art education	0.43	0.50
Business education	0.46	0.52
Elementary education	0.85	1.41
English education	0.64	0.96
Foreign language education	0.28	1.24
General education	0.66	0.72
Health education	0.51	1.28
Mathematics education	0.43	1.20
Music education	0.70	1.73
Other education major	0.51	3.27
Physical education	0.87	1.67
Pre-elementary education	0.00	0.22
Reading education	0.00	0.10
Science education	0.45	1.08
Secondary education	0.42	2.52
Social studies education	0.86	1.90
Special education	0.41	0.89
Vocational education/Home economics education	0.84	0.92
Non-education degree field		
Unweighted sample size	1,180	721
	Standard errors (in percents)	
Business and communications	0.97	1.11
Fine arts	0.93	0.76
Foreign languages	0.70	1.27
Interdisciplinary and area studies	0.23	0.83
Letters	1.32	1.67
Life sciences	0.91	1.18
Mathematics	0.95	1.25
Other non-education major	0.85	0.21
Physical sciences	0.57	0.75
Psychology	0.72	0.69
Social sciences	1.94	3.26
Theology	0.16	1.09
Vocational or industrial arts/Home economics	0.82	0.00

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 17.--Distribution of major degree fields of younger teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	56,379	19,528
	Percent	
Art education	2.5	0.4
Business education	2.4	0.3
Elementary education	28.9	45.7
English education	4.6	3.3
Foreign language education	1.0	0.6
General education	5.7	1.9
Health education	1.9	1.7
Mathematics education	3.3	2.5
Music education	5.6	3.9
Other education major	4.5	5.1
Physical education	9.0	7.1
Pre-elementary education	4.5	7.5
Reading education	1.6	1.1
Science education	2.6	2.3
Secondary education	3.6	2.1
Social studies education	2.7	3.7
Special education	10.4	9.3
Vocational education/Home economics education	5.3	1.6
Non-education degree field		
Total number of teachers (weighted)	8,829	10,516
	Percent	
Business and communications	6.6	4.0
Fine arts	11.7	8.4
Foreign languages	8.9	2.6
Interdisciplinary and area studies	2.7	3.9
Letters	24.4	24.4
Life sciences	9.5	10.4
Mathematics	5.7	6.0
Other non-education major	8.3	0.0
Physical sciences	3.1	2.3
Psychology	6.0	11.1
Social sciences	21.0	23.4
Theology	0.0	1.5
Vocational or industrial arts/Home economics	4.2	1.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 18.--Standard errors for distribution of major degree fields of younger teachers, by sector (table 17)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	955	854
	Standard errors (in percents)	
Art education	0.76	0.22
Business education	0.61	0.18
Elementary education	1.86	2.91
English education	0.93	0.65
Foreign language education	0.38	0.27
General education	1.02	0.53
Health education	0.58	0.66
Mathematics education	0.47	0.52
Music education	1.07	0.84
Other education major	0.83	1.92
Physical education	1.11	1.29
Pre-elementary education	0.85	1.04
Reading education	0.47	0.43
Science education	0.41	0.69
Secondary education	0.88	0.48
Social studies education	0.65	0.89
Special education	1.43	3.02
Vocational education/Home economics education	0.93	0.73
Non-education degree field		
Unweighted sample size	272	458
	Standard errors (in percents)	
Business and communications	1.66	0.97
Fine arts	3.21	1.40
Foreign languages	3.00	0.85
Interdisciplinary and area studies	1.33	1.43
Letters	2.44	4.12
Life sciences	1.89	2.71
Mathematics	1.67	1.34
Other non-education major	2.09	0.05
Physical sciences	0.92	0.64
Psychology	1.58	1.68
Social sciences	3.90	4.14
Theology	0.00	0.61
Vocational or industrial arts/Home economics	1.48	1.21

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 19.--Distribution of major degree fields of mid-age teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	1,471,555	196,424
	Percent	
Art education	2.6	1.8
Business education	3.2	1.5
Elementary education	33.4	44.7
English education	6.1	5.7
Foreign language education	1.0	1.9
General education	7.4	1.9
Health education	2.4	1.5
Mathematics education	4.0	2.5
Music education	3.5	3.8
Other education major	4.5	4.9
Physical education	6.7	5.4
Pre-elementary education	2.6	4.5
Reading education	0.7	1.1
Science education	3.5	2.4
Secondary education	2.3	4.8
Social studies education	2.7	5.3
Special education	4.9	4.1
Vocational education/Home economics education	5.6	1.5
Non-education degree field		
Total number of teachers (weighted)	440,745	138,304
	Percent	
Business and communications	4.7	3.7
Fine arts	7.3	8.4
Foreign languages	5.9	6.3
Interdisciplinary and area studies	2.3	2.8
Letters	19.4	22.6
Life sciences	8.7	9.3
Mathematics	8.5	6.9
Other non-education major	4.6	0.3
Physical sciences	3.0	2.8
Psychology	6.4	7.4
Social sciences	25.7	25.5
Theology	0.1	2.4
Vocational or industrial arts/Home economics	3.5	1.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 20.--Standard errors for distribution of major degree fields of mid-age teachers, by sector (table 19)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	5,674	2,573
	Standard errors (in percents)	
Art education	0.31	0.20
Business education	0.26	0.47
Elementary education	0.84	1.46
English education	0.41	0.92
Foreign language education	0.20	0.36
General education	0.43	0.44
Health education	0.27	0.39
Mathematics education	0.24	0.40
Music education	0.35	0.50
Other education major	0.30	0.87
Physical education	0.42	0.69
Pre-elementary education	0.26	0.70
Reading education	0.12	0.28
Science education	0.23	0.39
Secondary education	0.24	0.99
Social studies education	0.41	0.69
Special education	0.42	0.97
Vocational education/Home economics education	0.39	0.33
Non-education degree field		
Unweighted sample size	2,001	1,763
	Standard errors (in percents)	
Business and communications	0.59	0.54
Fine arts	0.83	0.89
Foreign languages	0.80	0.77
Interdisciplinary and area studies	0.55	0.77
Letters	1.20	1.31
Life sciences	0.67	0.87
Mathematics	0.60	0.68
Other non-education major	0.59	0.14
Physical sciences	0.33	0.35
Psychology	0.72	0.65
Social sciences	1.36	1.59
Theology	0.00	0.38
Vocational or industrial arts/Home economics	0.57	0.43

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 21.--Distribution of major degree fields of older teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	341,054	36,482
	Percent	
Art education	2.0	0.8
Business education	4.4	1.7
Elementary education	33.5	40.4
English education	5.9	8.4
Foreign language education	1.2	2.1
General education	10.8	5.0
Health education	1.4	0.3
Mathematics education	2.9	2.2
Music education	4.7	2.8
Other education major	2.9	5.4
Physical education	6.0	4.5
Pre-elementary education	2.1	4.4
Reading education	0.7	1.6
Science education	3.8	2.3
Secondary education	2.4	4.8
Social studies education	7.4	7.7
Special education	1.2	1.8
Vocational education/Home economics education	6.7	3.7
Non-education degree field		
Total number of teachers (weighted)	140,536	28,549
	Percent	
Business and communications	7.6	2.4
Fine arts	6.8	6.5
Foreign languages	6.5	7.5
Interdisciplinary and area studies	0.8	3.1
Letters	17.3	25.5
Life sciences	8.1	5.4
Mathematics	8.0	11.4
Other non-education major	7.4	0.9
Physical sciences	3.1	4.4
Psychology	5.6	5.2
Social sciences	24.6	23.0
Theology	0.5	2.2
Vocational or industrial arts/Home economics	3.6	2.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 22.--Standard errors for distribution of major degree fields of older teachers, by sector (table 21)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	1,463	501
	Standard errors (in percents)	
Art education	0.52	0.36
Business education	0.67	0.73
Elementary education	1.52	2.94
English education	0.83	1.13
Foreign language education	0.34	0.86
General education	0.99	1.42
Health education	0.36	0.31
Mathematics education	0.40	1.04
Music education	0.89	0.79
Other education major	0.50	1.20
Physical education	0.84	3.96
Pre-elementary education	0.47	1.26
Reading education	0.27	0.57
Science education	0.44	0.77
Secondary education	0.44	1.26
Social studies education	0.84	1.23
Special education	0.42	0.86
Vocational education/Home economics education	0.92	0.87
Non-education degree field		
Unweighted sample size	653	375
	Standard errors (in percents)	
Business and communications	1.26	0.86
Fine arts	1.42	1.45
Foreign languages	1.35	1.20
Interdisciplinary and area studies	0.55	1.14
Letters	1.95	2.39
Life sciences	1.07	1.49
Mathematics	1.10	2.56
Other non-education major	1.46	0.50
Physical sciences	0.66	1.31
Psychology	1.08	1.59
Social sciences	2.25	3.89
Theology	0.41	0.87
Vocational or industrial arts/Home economics	0.82	0.94

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 23.--Distribution of major degree fields of white, non-Hispanic teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	1,600,857	235,427
	Percent	
Art education	2.6	1.6
Business education	3.3	1.4
Elementary education	32.9	44.9
English education	6.1	6.1
Foreign language education	1.2	1.8
General education	8.4	2.7
Health education	2.2	1.3
Mathematics education	3.7	2.6
Music education	4.3	3.6
Other education major	2.7	4.5
Physical education	6.8	5.2
Pre-elementary education	2.4	4.7
Reading education	0.8	1.2
Science education	3.7	2.2
Secondary education	2.5	4.7
Social studies education	6.5	5.6
Special education	4.2	4.2
Vocational education/Home economics education	5.6	1.7
Non-education degree field		
Total number of teachers (weighted)	527,520	164,497
	Percent	
Business and communications	5.3	3.1
Fine arts	7.2	7.9
Foreign languages	5.8	6.0
Interdisciplinary and area studies	1.9	2.9
Letters	19.0	24.5
Life sciences	8.2	9.2
Mathematics	8.6	7.8
Other non-education major	5.2	0.4
Physical sciences	3.1	2.9
Psychology	6.4	7.1
Social sciences	25.6	24.4
Theology	0.2	2.2
Vocational or industrial arts/Home economics	3.7	1.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 24.--Standard errors for distribution of major degree fields of white, non-Hispanic teachers, by sector (table 23)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	6,113	3,080
	Standard errors (in percents)	
Art education	0.30	0.20
Business education	0.27	0.39
Elementary education	0.84	1.52
English education	0.39	0.85
Foreign language education	0.17	0.36
General education	0.45	0.52
Health education	0.24	0.33
Mathematics education	0.22	0.38
Music education	0.38	0.46
Other education major	0.27	0.61
Physical education	0.40	0.61
Pre-elementary education	0.24	0.70
Reading education	0.13	0.28
Science education	0.22	0.33
Secondary education	0.23	0.81
Social studies education	0.39	0.65
Special education	0.39	1.17
Vocational education/Home economics education	0.37	0.27
Non-education degree field		
Unweighted sample size	2,348	2,095
	Standard errors (in percents)	
Business and communications	0.57	0.44
Fine arts	0.78	0.81
Foreign languages	0.71	0.65
Interdisciplinary and area studies	0.43	0.50
Letters	1.08	1.53
Life sciences	0.59	0.83
Mathematics	0.56	0.71
Other non-education major	0.60	0.15
Physical sciences	0.32	0.37
Psychology	0.65	0.75
Social sciences	1.24	1.53
Theology	0.13	0.42
Vocational or industrial arts/Home economics	0.52	0.49

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 25.--Distribution of major degree fields of minority teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	268,128	17,007
	Percent	
Art education	1.8	1.1
Business education	3.6	1.2
Elementary education	35.4	43.3
English education	5.5	3.5
Foreign language education	3.1	3.3
General education	5.5	2.2
Health education	1.8	0.2
Mathematics education	3.7	1.9
Music education	1.9	2.9
Other education major	4.4	9.8
Physical education	5.7	4.3
Pre-elementary education	3.9	6.4
Reading education	0.2	0.7
Science education	2.8	4.2
Secondary education	1.7	3.7
Social studies education	7.9	3.4
Special education	5.0	4.9
Vocational education/Home economics education	6.2	2.7
Non-education degree field		
Total number of teachers (weighted)	62,590	12,872
	Percent	
Business and communications	5.3	7.2
Fine arts	7.9	8.2
Foreign languages	8.4	11.2
Interdisciplinary and area studies	3.2	4.9
Letters	17.0	15.0
Life sciences	11.2	4.5
Mathematics	6.8	5.1
Other non-education major	6.0	0.1
Physical sciences	2.2	4.9
Psychology	5.7	6.8
Social sciences	23.5	27.6
Theology	0.0	2.6
Vocational or industrial arts/Home economics	2.8	1.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 26.--Standard errors for distribution of major degree fields of minority teachers, by sector (table 25)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	1,222	251
	Standard errors (in percents)	
Art education	0.54	0.62
Business education	0.59	0.77
Elementary education	1.85	4.93
English education	0.82	1.39
Foreign language education	0.63	1.65
General education	0.80	1.81
Health education	0.47	0.26
Mathematics education	0.53	1.65
Music education	0.59	1.08
Other education major	0.76	3.66
Physical education	0.96	1.85
Pre-elementary education	0.75	1.60
Reading education	0.15	0.77
Science education	0.47	2.41
Secondary education	0.43	2.01
Social studies education	1.01	1.18
Special education	0.84	2.19
Vocational education/Home economics education	1.01	2.25
Non-education degree field		
Unweighted sample size	349	177
	Standard errors (in percents)	
Business and communications	1.44	2.98
Fine arts	2.09	2.46
Foreign languages	2.08	2.60
Interdisciplinary and area studies	1.70	1.80
Letters	2.65	3.85
Life sciences	1.96	2.40
Mathematics	1.26	2.69
Other non-education major	1.66	0.15
Physical sciences	0.68	2.02
Psychology	1.31	2.80
Social sciences	3.25	7.82
Theology	0.00	1.22
Vocational or industrial arts/Home economics	0.92	0.74

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 27.--Distribution of major degree fields of mathematics and science teachers, by sector

Major degree field for bachelor's degree	Public	Private
Education degree field		
Total number of teachers (weighted)	499,362	54,731
	Percent	
Art education	1.1	1.6
Business education	2.5	1.3
Elementary education	33.5	41.6
English education	1.5	3.5
Foreign language education	0.7	0.6
General education	9.1	4.0
Health education	1.7	1.4
Mathematics education	11.7	9.8
Music education	0.7	1.1
Other education major	3.4	3.5
Physical education	6.9	3.9
Pre-elementary education	1.4	1.6
Reading education	0.5	0.9
Science education	10.2	7.4
Secondary education	2.6	6.7
Social studies education	4.2	5.4
Special education	6.3	4.5
Vocational education/Home economics education	2.1	1.2
Non-education degree field		
Total number of teachers (weighted)	177,718	52,807
	Percent	
Business and communications	5.1	3.8
Fine arts	3.6	3.0
Foreign languages	2.0	2.6
Interdisciplinary and area studies	0.7	2.9
Letters	9.7	12.3
Life sciences	18.6	22.7
Mathematics	23.4	20.9
Other non-education major	5.6	0.8
Physical sciences	8.5	7.7
Psychology	5.6	3.7
Social sciences	17.3	17.0
Theology	0.3	1.4
Vocational or industrial arts/Home economics	2.7	1.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.

Table 28.--Standard errors for distribution of major degree fields of mathematics and science teachers, by sector (table 27)

Major degree field for bachelor's degree	Public	Private
Education degree field		
Unweighted sample size	2,675	741
	Standard errors (in percents)	
Art education	0.40	0.52
Business education	0.36	0.48
Elementary education	1.31	2.81
English education	0.32	0.91
Foreign language education	0.22	0.39
General education	0.62	0.88
Health education	0.30	0.59
Mathematics education	0.64	1.54
Music education	0.25	0.31
Other education major	0.55	1.00
Physical education	0.68	0.55
Pre-elementary education	0.28	0.49
Reading education	0.16	0.45
Science education	0.64	1.03
Secondary education	0.30	1.51
Social studies education	0.55	1.06
Special education	0.84	1.44
Vocational education/Home economics education	0.32	0.35
Non-education degree field		
Unweighted sample size	1,223	676
	Standard errors (in percents)	
Business and communications	0.84	0.92
Fine arts	0.77	0.70
Foreign languages	0.66	0.62
Interdisciplinary and area studies	0.31	0.70
Letters	1.07	1.34
Life sciences	1.29	2.02
Mathematics	1.36	1.58
Other non-education major	0.88	0.40
Physical sciences	0.84	0.85
Psychology	1.04	1.01
Social sciences	1.78	2.33
Theology	0.22	0.41
Vocational or industrial arts/Home economics	0.66	0.50

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1985 Public School Survey and 1985-86 National Survey of Private Schools.